

Application No.: 10/612999

Case No.: 56086US012

Amendments to the Claims:

The following Listing of Claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claims 1-29 (Canceled).

30. (Previously Presented) A method for making agglomerate particles comprising the steps of:

- a) forcing a composition comprising a radiation curable polymerizable binder precursor and a plurality of solid particulates through a perforated substrate to form agglomerate precursor particles; and
- b) separating the agglomerate precursor particles from the perforated substrate; and
- c) irradiating the agglomerate precursor particles wherein radiation energy is transmitted from a radiation energy source to the agglomerate precursor particles to at least partially cure the binder precursor to provide agglomerate particles, and wherein the steps a), b), and c) are spatially oriented in a vertical and consecutive manner.

31. (Previously Presented) A method according to claim 30, wherein the agglomerate particles are collected after the irradiation step.

32. (Previously Presented) A method according to claim 30, wherein the irradiation step comprises a step of passing the agglomerate precursor particles into a first curing zone that contains the radiation source.

33. (Previously Presented) A method according to claim 30, wherein the agglomerate particles are passed through a second curing zone, wherein energy is transmitted from an energy source to the agglomerate particles to further cure the agglomerate particles.

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34. (Previously Presented) A method according to claim 30, wherein the binder precursor is selected from the group consisting of epoxy resins, acrylated urethane resins, acrylated epoxy resins, ethylenically unsaturated resins, aminoplast resins having pendant unsaturated carbonyl groups, isocyanurate derivatives having at least one pendant acrylate group, isocyanate derivatives having at least one pendant acrylate group, and combinations thereof.

35. (Previously Presented) A method according to claim 30, wherein the plurality of solid particulates is selected from the group consisting of fillers, plastic particulates, reinforcing particulates, inorganic binder precursor particulates, anti-static agents, lubricants, pigments, suspending agents, and combinations thereof.

36. (Previously Presented) A method according to claim 30, wherein the agglomerate particles are filamentary shaped and have a length ranging from about 10 to about 1500 micrometers.

37. (Previously Presented) A method according to claim 30, wherein the length of the agglomerate particles is in a range from about 20 to about 800 micrometers.

38. (Previously Presented) A method according to claim 30, wherein the length of the agglomerate particles is in a range from about 50 to about 400 micrometers.

39. (Previously Presented) A method according to claim 30, wherein the agglomerate particles have a substantially constant cross-sectional shape.

40. (Previously Presented) A method according to claim 39, wherein the cross-sectional shape comprises circles, polygons or combinations thereof.

41. (Previously Presented) A method according to claim 30, wherein the agglomerate precursor particles further comprise a modifying additive.

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42. (Currently Amended) A method according to claim 41+2, wherein the modifying additives are selected from the group consisting of coupling agents, grinding aids, fillers, inorganic binder precursors, surfactants, and combinations thereof.

43. (Previously Presented) A method according to claim 30, wherein the step of forcing the composition through the perforated substrate to form the agglomerate particles is selected from the group consisting of extrusion, milling, and calendering.

44. (Previously Presented) A method according to claim 30, wherein the radiation energy source is selected from the group consisting of electron beam, ultraviolet light, visible light, laser light, and combinations thereof.

45. (Previously Presented) A method according to claim 32, wherein the radiation energy source is selected from the group consisting of electron beam, ultraviolet light, visible light, laser light, and combinations thereof.

46. (Previously Presented) A method according to claim 33, wherein the energy source is selected from the group consisting of electron beam, ultraviolet light, visible light, microwave, laser light, thermal, and combinations thereof.

47. (Previously Presented) A method according to claim 30, wherein steps (a), (b), and (c) are performed continuously.

48. (Previously Presented) A method according to claim 33, wherein steps (a), (b), and (c) are performed sequentially and continuously.

49. (Previously Presented) A method according to claim 30, wherein the plurality of solid particulates comprise from 5 to 95% by weight of the composition.

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50. (Previously Presented) A method according to claim 30, wherein the plurality of solid particulates comprise from 40 to 95% by weight of the composition.

51. (Previously Presented) A method according to claim 30, wherein said composition is 100% solids.

52. (Previously Presented) A method according to claim 30, wherein a size reduction step is performed on the agglomerate particles after the irradiation step.

53. (Previously Presented) A method according to claim 33, wherein a size reduction step is performed on the agglomerate particles after being passed through the second curing zone.

54. (Previously Presented) A method according to claim 52, wherein the size reduction step comprises the methods of milling, crushing and tumbling.

55. (Previously Presented). A method according to claim 53, wherein the size reduction step comprises the methods of milling, crushing and tumbling.

56. (Previously Presented) An agglomerate particle made according to claim 30.

57. (Previously Presented) An inorganic aggregate precursor agglomerate particle made according to claim 30.

58. (Previously Presented) A method according to claim 30, wherein the solid particulates comprise abrasive grains abrasive grains having a Mohs hardness of at least 8.

59. (Previously Presented) A method according to claim 58, wherein the abrasive grains have a Mohs hardness of greater than 9.

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60. (Previously Presented) A method according to claim 58, wherein the abrasive grains comprise at least one of fused aluminum oxide abrasive grains, ceramic aluminum oxide abrasive grains, or alumina zirconia abrasive grains.

61. (Previously Presented) A method according to claim 58, wherein the irradiation step includes passing the agglomerate precursor particles into a first curing zone that includes the radiation source.

62. (Previously Presented) A method according to claim 58, wherein the agglomerate particles are collected after the irradiation step.

63. (Previously Presented) A method according to claim 58, wherein the agglomerate particles are passed through a second curing zone, wherein energy is transmitted from an energy source to the agglomerate particles to further cure the agglomerate particles.

64. (Previously Presented) A method according to claim 63, wherein the second curing zone includes a radiation energy source selected from the group consisting of electron beam, ultraviolet light, visible light, microwave, laser light, thermal, and combinations thereof.

65. (Previously Presented) A method according to claim 63, wherein a size reduction step is performed on the agglomerate particles after the irradiation step.

66. (Previously Presented) A method according to claim 58, wherein the binder precursor is selected from the group consisting of epoxy resins, acrylated urethane resins, acrylated epoxy resins, ethylenically unsaturated resins, aminoplast resins having pendant unsaturated carbonyl groups, isocyanurate derivatives having at least one pendant acrylate group, isocyanate derivatives having at least one pendant acrylate group, and combinations thereof.

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67. (Previously Presented) A method according to claim 58, wherein the agglomerate particles are filamentary shaped and have a length ranging from about 10 to about 1500 micrometers.

68. (Previously Presented) A method according to claim 58, wherein the length of the agglomerate particles is in a range from about 20 to about 800 micrometers.

69. (Previously Presented) A method according to claim 58, wherein the length of the agglomerate particles is in a range from about 50 to about 400 micrometers.

70. (Previously Presented) A method according to claim 58, wherein the agglomerate particles have a substantially constant cross-sectional shape.

71. (Previously Presented) A method according to claim 58, wherein the cross-sectional shape comprises circles, polygons or combinations thereof.

72. (Previously Presented) A method according to claim 58, wherein the agglomerate precursor particles further comprise a modifying additive.

73. (Previously Presented) A method according to claim 72, wherein the modifying additives are selected from the group consisting of coupling agents, grinding aids, fillers, inorganic binder precursors, surfactants, and combinations thereof.

74. (Previously Presented) A method according to claim 58, wherein step (a) the step of forcing the composition through the perforated substrate to form the agglomerate particles is selected from the group consisting of extrusion and milling.

75. (Previously Presented) A method according to claim 58, wherein the radiation energy source is selected from the group consisting of electron beam, ultraviolet light, visible light, laser light, and combinations thereof.

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76. (Previously Presented) A method according to claim 58, wherein steps (a), (b), and (c) are performed continuously.

77. (Previously Presented) A method according to claim 58, wherein the plurality of abrasive grains comprise from 5 to 95% by weight of the composition.

78. (Previously Presented) A method according to claim 58, wherein the plurality of solid particulates comprise from 40 to 95% by weight of the composition.

79. (Previously Presented) A method according to claim 58, wherein a size reduction step is performed on the agglomerate particles after the irradiation step.

80. (Currently Amended) A method according to claim ~~30~~¹, wherein the solid particulates comprise at least one of fused aluminum oxide abrasive grains, heat treated aluminum oxide abrasive grains, ceramic aluminum oxide abrasive grains, or alumina-zirconia abrasive grains.

81. (Previously Presented) A method according to claim 80, wherein the irradiation step includes passing the agglomerate precursor particles into a first curing zone that includes the radiation energy source.

82. (Previously Presented) A method according to claim 80, wherein the agglomerate particles are collected after the irradiation step.

83. (Previously Presented) A method according to claim 80, wherein step (c) includes a second curing zone wherein energy is transmitted from a radiation energy source to the agglomerate particles to further cure the agglomerate particles.

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84. (Previously Presented) A method according to claim 80, wherein the second curing zone includes a radiation energy source selected from the group consisting of electron beam, ultraviolet light, visible light, microwave, laser light, thermal, and combinations thereof.

85. (Previously Presented) A method according to claim 82, wherein a size reduction step is performed on the agglomerate particles after the irradiation step.

86. (Previously Presented) A method according to claim 80, wherein the binder precursor is selected from the group consisting of epoxy resins, acrylated urethane resins, acrylated epoxy resins, ethylenically unsaturated resins, aminoplast resins having pendant unsaturated carbonyl groups, isocyanurate derivatives having at least one pendant acrylate group, isocyanate derivatives having at least one pendant acrylate group, and combinations thereof.

87. (Previously Presented) A method according to claim 80, wherein the agglomerate particles are filamentary shaped and have a length ranging from about 10 to about 1500 micrometers.

88. (Previously Presented) A method according to claim 80, wherein the length of the agglomerate particles is in a range from about 20 to about 800 micrometers.

89. (Previously Presented) A method according to claim 80, wherein the length of the agglomerate particles is in a range from about 50 to about 400 micrometers.

90. (Previously Presented) A method according to claim 80, wherein the agglomerate particles have a substantially constant cross-sectional shape.

91. (Previously Presented) A method according to claim 90, wherein the cross-sectional shape comprises circles, polygons or combinations thereof.

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92. (Previously Presented) A method according to claim 90, wherein the agglomerate precursor particles further comprise a modifying additive.

93. (Previously Presented) A method according to claim 90, wherein the modifying additives are selected from the group consisting of coupling agents, grinding aids, fillers, inorganic binder precursors, surfactants, and combinations thereof.

94. (Previously Presented) A method according to claim 90, wherein the second curing zone includes a radiation energy source selected from the group consisting of electron beam, ultraviolet light, visible light, microwave, laser light, thermal, and combinations thereof.

95. (Previously Presented) A method according to claim 90, wherein steps (a), (b), and (c) are performed continuously.

96. (Previously Presented) A method according to claim 90, wherein the plurality of abrasive grains comprise from 5 to 95% by weight of the composition.

97. (Previously Presented) A method according to claim 90, wherein the plurality of solid particulates comprise from 40 to 95% by weight of the composition.

98. (Previously Presented) A method according to claim 90, wherein a size reduction step is performed on the agglomerate particles after the irradiation step.

99. (Previously Presented) A method of making an abrasive article comprising the steps of:

a) forcing a composition through a perforated substrate to form agglomerate precursor particles, the composition comprising a radiation curable polymerizable binder precursor and a plurality of abrasive grains; and

b) separating the agglomerate precursor particles from the perforated substrate;

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- c) irradiating the agglomerate precursor particles, wherein radiation energy is transmitted from a radiation energy source to the agglomerate precursor particles to at least partially cure the binder precursor to provide agglomerate particles; and
- d) incorporating at least one agglomerate particle into an abrasive article, wherein steps a), b), and c) are spatially oriented in a vertical and consecutive manner.

100. (Previously Presented) A method according to claim 99, wherein the abrasive article comprises a bonded abrasive article.

101. (Previously Presented) A method according to claim 99, wherein the abrasive article comprises a coated abrasive article.

102. (Previously Presented) A method according to claim 99, wherein the abrasive article comprises a nonwoven abrasive article.

103. (Previously Presented) A method according to claim 99, wherein the abrasive grains have a Mohs hardness of at least 8.

104. (Currently Amended) A method according to claim 99, wherein the abrasive grains comprise at least one of fused aluminum oxide abrasive grains, heat treated aluminum oxide abrasive grains, ceramic aluminum oxide abrasive grains, or alumina-zirconia abrasive grains.

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